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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/075,149	02/14/2002	Milivoje Aleksic	00100.02.0060(990060D-1)	7928

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EXAMINER
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KING, JUSTIN

ART UNIT	PAPER NUMBER
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2111

DATE MAILED: 12/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

10/075,149

**Applicant(s)**

ALEKSIC ET AL.

**Examiner**

Justin I. King

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 07 May 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 18-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 18-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 May 2002 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Specification***

1. The abstract of the disclosure is objected to because it exceeds the maximum of 150 words. Correction is required. See MPEP § 608.01(b).
2. The status and information regarding the co-pending applications listed on Specification page 1 should be updated if there are any changes.

### ***Drawings***

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the system controller with a high-speed PCI bus arbiter, an I/O controller with a low-speed PCI arbiter, a first memory channel controller, and a second memory channel controller in claim 1 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the

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renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Objections***

4. Claims 18 and 20 are objected to because of the following informalities: The claim 10 recites "low speed PCI arbiter" in line 7, and claim 20 recites "low speed" in line 2. The rest of the claim language uses a hyphenated "low-speed" instead of "low speed". Appropriate correction is required for consistency.

5. Claim 21 is objected to because of the following informalities: The claim recites "at a data rate higher **that** the data rate of the low-speed PCI" in line 2. Applicant may have meant "than" instead of "that". Appropriate correction is required for clarification.

### ***Claim Rejections - 35 USC § 112***

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 21 and 23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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Claim 21 recites the limitation "the I/O device" in lines 1-2. There is insufficient antecedent basis for this limitation in the claim.

Claim 23 recites the limitation "the arbiter of the IO controller" in the last line. There is insufficient antecedent basis for this limitation. Applicant needs specify which arbiter this limitation is referring to.

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

10. Claims 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Iachetta, Jr. (U.S. Patent No. 5,727,171), Kelley et al. (U.S. Patent No. 6,295,568), and Heil et al. (U.S. Patent No. 5,392,407).

Referring to claim 18: Iachetta discloses a data processing system including a system controller with an arbiter (figure 4, combined structures 640 and 710) and an I/O controller with

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an arbiter (figure 4, combined structures of 810 and 910). Iachetta discloses a memory system (figure 4, structure 660) connected to the system controller. The control means for this communication is the claimed memory channel controller. Iachetta discloses that the system controller connects to a high-speed PCI bus (figure 4, structure 680), and the I/O controller connects to a low-speed PCI bus (figure 4, structure 860). Iachetta does not disclose that each arbiter is physically integrated into the system controller or the I/O controller. Iachetta also does not disclose two separate memory channels.

Kelly discloses a bridge supporting multiple frequency speeds (figure 3). Kelly's bridge has an integrated arbiter (figure 3, structure 102) to arbitrate bus access among different frequency segments. Kelly teaches one to use one central arbiter to oversee and to support multiple bus speeds and to arbitrate the bus according to the each frequency segment's relative workload.

Heil discloses a multiple-port structure. Heil discloses two separate memory channel controller (figure 8, structures 134, 134, 142, and 144). Heil teaches that the general access latency caused by the severe bandwidth constraint can be improved with the dual memory channels (column 1, lines 52-56).

Hence, it would have been obvious to one having ordinary skill in the computer art at the time Applicant made the invention to adapt the Kelly and Heil's teachings onto Iachetta because Kelly teaches one to integrate an arbiter into the bridge to arbitrate the bus according to the each frequency segment's relative workload, and Heil teaches one to improve the general access latency by the dual memory channels.

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Referring to claims 19-20: Iachetta's high-speed bus at 66 MHz is at least 10 percent faster than the low-speed bus at 33 MHz.

11. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Iachetta and Kelley.

Referring to claim 22: Iachetta discloses a data processing system including a system controller with an arbiter (figure 4, combined structures 640 and 710) and an I/O controller with an arbiter (figure 4, combined structures of 810 and 910). Iachetta discloses that the system controller connects to a high-speed PCI bus (figure 4, structure 680), and the I/O controller connects to a low-speed PCI bus (figure 4, structure 860). The high-speed PCI bus is the claimed first bus of a predefined protocol type at a first data rate. The low-speed PCI bus is the claimed second bus. The I/O controller's connecting means to the high-speed PCI bus is the claimed control circuitry. Iachetta does not disclose that each arbiter is physically integrated into the system controller or the I/O controller.

Kelly discloses a bridge supporting multiple frequency speeds (figure 3). Kelly's bridge has an integrated arbiter (figure 3, structure 102) to arbitrate bus access among different frequency segments. Kelly teaches one to use a central arbiter to oversee and to support multiple bus speeds and to arbitrate the bus according to the each frequency segment's workload.

Hence, it would have been obvious to one having ordinary skill in the computer art at the time Applicant made the invention to adapt the Kelly's teachings onto Iachetta because Kelly teaches one to integrate an arbiter into the bridge to arbitrate the bus according to the each frequency segment's relative workload.

***Conclusion***

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Justin I. King whose telephone number is 571-272-3628. The examiner can normally be reached on Monday through Friday, 9:00 am to 5:00 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Rinehart can be reached on 571-272-3632 or on the central telephone number, (571) 272-2100. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

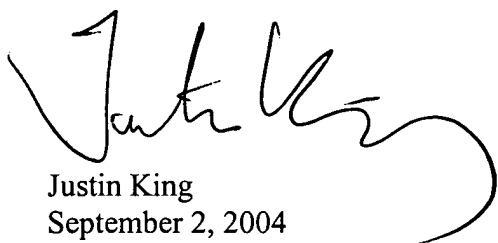
Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Lastly, paper copies of cited U.S. patents and U.S. patent application publications will cease to be mailed to applicants with Office actions as of June 2004. Paper copies of foreign patents and non-patent literature will continue to be included with office actions. These cited U.S. patents and patent application publications are available for download via the Office's PAIR. As an alternate source, all U.S. patents and patent application publications are available on the USPTO web site ([www.uspto.gov](http://www.uspto.gov)), from the Office of Public Records and from commercial sources. Applicants are referred to the Electronic Business Center (EBC) at <http://www.uspto.gov/ebc/index.html> or 1-866-217-9197 for information on this policy. Requests




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to restart a period for response due to a missing U.S. patent or patent application publications  
will not be granted.



Justin King  
September 2, 2004



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